National Healthcare Safety Network (NHSN)

Long-term Care Facility (LTCF) Component

Healthcare Associated Infection Surveillance Module:
UTI Event Reporting
Target Audience

- This training is designed for those who will collect, report, or analyze prevention process measures data in NHSN, and may include:
  - NHSN Facility Administrator
  - LTCF Component Primary Contact
  - LTCF Administrator
  - Director of Nursing
  - Infection Prevention and Control Staff
  - Professional Nursing Staff
  - Trained Support Staff

You should have viewed the Overview of the LTCF Component slides prior to beginning this training.
Objectives

- Describe the rationale for monitoring urinary tract infections (UTI) in NHSN
- Describe the methodology, protocols, and definitions used in monitoring UTI events
Documents and Forms

- The following documents and forms will be discussed in this training. You may wish to PRINT these to follow along.

1) UTI Event for LTCF Protocol
2) Table of Instructions for the UTI Form
3) UTI for LTCF Event Reporting Form
4) Denominators for LTCF Form
5) Monthly Reporting Plan for LTCF

http://www.cdc.gov/nhsn/LTC/uti/index.html
Background

Why monitor urinary tract infections in long-term care facilities?

- UTIs are the most frequently reported infections in nursing homes and drive antibiotic use among residents
- Focused monitoring of symptomatic UTIs, both catheter and non-catheter associated, helps identify trends in these infections and provide data to improve antibiotic use in your LTCF
- Tracking these events will also inform infection control staff of the impact of targeted prevention efforts
Purpose of UTI Event Reporting

- To calculate rates of UTI events among all residents in a facility.
  - Non-catheter associated UTI rates will be calculated among all residents without a catheter in the facility.
  - Catheter-associated UTI rates will be calculated among only those residents with indwelling urinary catheters.

- To identify which residents get UTIs, events related to urinary catheters, and organisms cause UTIs in a facility

- To monitor antibiotic use for UTIs

- To assess the impact of efforts to prevent UTI over time
Settings for UTI Event Reporting

- Reporting is available for the following facility types:
  - Certified skilled nursing facilities/nursing homes (LTC:SKILLNURS)
  - Intermediate/chronic care facilities for the developmentally disabled (LTC:DEVDIS)
Reporting Requirements

- Facilities must indicate UTI surveillance in the *Monthly Reporting Plan for LTCF*
- UTI surveillance must be reported for at least 6 consecutive months to provide meaningful measures
- UTI surveillance should be performed facility-wide
Monthly Reporting Plan for LTCF

Add Monthly Reporting Plan

Mandatory fields marked with *

Facility ID*: Stone and Thompson Quality Care Facility (ID 11131)
Month*: March
Year*: 2012

No Long Term Care Facility Component Modules Followed this Month

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<thead>
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<th>HAI Module</th>
<th>Locations</th>
<th>UTI</th>
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<td>MRSA - MRSA</td>
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Save | Back
Symptomatic UTI (SUTI)

- Resident manifests signs and symptoms which localize the infection to the urinary tract

- Can occur in residents without urinary devices or residents managed with the following urinary devices: suprapubic catheters, straight in-and-out catheters and condom catheters.
  - A resident cannot have an indwelling catheter in place or have been exposed to one that was removed within 2 calendar days prior to symptom onset (where date of removal = Day 1).

- Three criteria can be applied for identifying Symptomatic UTI (SUTI), which combine signs and symptoms with laboratory and culture data (see next slide)
SUTI Event

Resident without an indwelling catheter (Meets criteria 1a OR 2a OR 3a):

- **SUTI – Criteria 1a**
  - Either of the following:
    1. Acute dysuria
    2. Acute pain, swelling or tenderness of the testes, epididymis or prostate

- **SUTI – Criteria 2a**
  - Either of the following:
    1. Fever *
    2. Leukocytosis b
  - AND
  - ONE or more of the following:
    - Costovertebral angle pain or tenderness
    - New or marked increase in suprapubic tenderness
    - Gross hematuria
    - New or marked increase in incontinence
    - New or marked increase in urgency
    - New or marked increase in frequency

- **SUTI – Criteria 3a**
  - TWO or more of the following:
    - Costovertebral angle pain or tenderness
    - New or marked increase in suprapubic tenderness
    - Gross hematuria
    - New or marked increase in incontinence
    - New or marked increase in urgency
    - New or marked increase in frequency

  - AND

- **Either of the following:**
  1. A voided urine culture with $\geq 10^8$ CFU/ml of no more than 2 species of microorganisms
  2. Positive culture with $\geq 10^2$ CFU/ml of any microorganisms from straight in/out catheter specimen

- **SUTI**

*Fever: Single temperature $\geq 37.8^\circ C (>100^\circ F)$, or $> 37.2^\circ C (>99.5^\circ F)$ on repeated occasions, or an increase of $>1.1^\circ C (>2^\circ C)$ over baseline

bLeukocytosis: $>14,000$ cells/mm$^3$, or Left shift ($> 6\%$ or $1,500$ bands/mm$^3$)

See UTI event protocol: insert website for UTI page
CA-SUTI Definitions

**Catheter-associated Symptomatic UTI (CA-SUTI)**
- SUTI which occurs in a resident while having an indwelling urinary catheter in place or removed within the 2 calendar days prior to event onset (day of removal = Day 1)
  - An indwelling urinary catheter should be in place for a minimum of 2 calendar days (Day 1 = day of insertion) in order for the SUTI to be catheter-associated
- SUTIs in residents managed with suprapubic, straight in-and-out, or condom (males only) catheters are **not** considered CA-SUTIs
Indwelling Urinary Catheter:

- A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a closed collection system (e.g. Foley catheter)

- Does NOT include straight in-and-out catheters or catheters not placed in the urethra (e.g. suprapubic, condom)
Resident with an indwelling catheter:

CA-SUTI – Criteria

ONE or more of the following with no alternate source:

- Fever
- Rigors
- New onset hypotension, with no alternate site of infection.
- New onset confusion/functional decline AND Leukocytosis
- New costovertebral angle pain or tenderness
- New or marked increase in suprapubic tenderness
- Acute pain, swelling or tenderness of the testes, epididymis or prostate
- Purulent discharge from around the catheter

AND

Any of the following:

If urinary catheter removed within last 2 calendar days:

1. A voided urine culture with $\geq 10^5$ CFU/ml of no more than 2 species of microorganisms
2. Positive culture with $\geq 10^2$ CFU/ml of any microorganisms from straight ln/out catheter specimen

If urinary catheter in place:

3. Positive culture with $\geq 10^5$ CFU/ml of any microorganisms from indwelling catheter specimen

See UTI event protocol: insert website for UTI page
ABUTI Definitions

- Asymptomatic Bacteremiac UTI (ABUTI)
  - Resident has NO signs and symptoms localizing to the urinary tract but has urine and blood cultures positive for the same bacteria
    - The microorganism in the blood and urine cultures should have the same genus and species to be considered a match
  - Can occur in residents with or without an indwelling urinary catheter
ABUTI Event

Resident with or without an indwelling catheter:

ABUTI – Criteria

Resident has no localizing urinary signs or symptoms (i.e., no urgency, frequency, acute dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness). If no catheter is in place, fever alone would not exclude ABUTI if other criteria are met.

AND

Any of the following:
1. A voided urine culture with $\geq 10^5$ CFU/ml of no more than 2 species of microorganisms
2. Positive culture with $\geq 10^2$ CFU/ml of any microorganisms from in/out catheter specimen
3. Positive culture with $\geq 10^5$ CFU/ml of any microorganisms from indwelling catheter specimen

AND

Positive blood culture with at least 1 matching organism in urine culture

ABUTI

See UTI event protocol: insert website for UTI page
Required Forms

- **Urinary Tract Infection (UTI) for LTCF Form**
  - Numerator data
    - Collect and report each SUTI, CA-SUTI or ABUTI that is identified during the months selected for surveillance.

- **Denominators for LTCF Locations Form**
  - Denominator data
    - Resident-days
    - Catheter-days
    - New antibiotic starts for UTI indication
UTI for LTCF Event Form

- **“Numerator”** – one form per UTI Event

### Urinary Tract Infection (UTI) for LTCF

**Facility ID:**

**Event #:**

**Resident ID:**

**Social Security #:**

Medicare number (or comparable railroad insurance number):

**Resident Name, Last:**

**First:**

**Middle:**

**Gender:** M F Other

**Date of Birth: __/__/____

**Ethnicity (specify):**

**Race (specify):**

**Resident type:**

- [ ] Short-stay
- [ ] Long-stay

**Date of First Admission to Facility: __/__/____

**Date of Current Admission to Facility: __/__/____

**Event Type:** UTI

**Date of Event: __/__/____

**Resident Care Location:**

- [ ] Long-term general nursing
- [ ] Long-term dementia
- [ ] Long-term psychiatric
- [ ] Skilled nursing/Short-term rehab (subacute)
- [ ] Ventilator
- [ ] Bariatric
- [ ] Hospice/Palliative

**Has resident been transferred from an acute care facility to your facility in the past 3 months?**

- [ ] Yes
- [ ] No

If yes, **date of last transfer from acute care to your facility: __/__/____

If yes, did the resident have an indwelling urinary catheter at the time of transfer to your facility?**

- [ ] Yes
- [ ] No

**Indwelling Urinary Catheter status at time of event onset (check one):**

- [ ] In place
- [ ] Removed within last 2 calendar days
- [ ] Not in place

If indwelling urinary catheter status in place or removed within last 2 calendar days:

**Site where indwelling urinary catheter Inserted (check one):**

- [ ] Your facility
- [ ] Acute care hospital
- [ ] Other
- [ ] Unknown

**Date of indwelling urinary catheter Insertion: __/__/____

If indwelling urinary catheter not in place, was another urinary device type present at the time of event onset?**

- [ ] Yes
- [ ] No

If yes, other device type:

- [ ] Suprapubic
- [ ] Condom (males only)
- [ ] Intermittent straight catheter

See Table of Instructions at: [http://www.cdc.gov/nhsn/PDFs/LTC/forms/57.140-TOI-UTI-TOI_FINAL.pdf](http://www.cdc.gov/nhsn/PDFs/LTC/forms/57.140-TOI-UTI-TOI_FINAL.pdf)
Completing the UTI Event Form: Instructions for key data fields

- **Date of Event**
  - Date when the first clinical evidence (signs or symptoms) of infection appeared or the date the specimen, used to meet the infection criteria, was collected, *whichever comes first.*

- **Example:** A resident had a Foley catheter in place and had documentation of new suprapubic pain on June 1\textsuperscript{st}. The resident had a urine specimen collected and sent for culture June 3rd. The date of event would be June 1\textsuperscript{st} since this is the date of symptom onset and occurred before the date of culture collection.
Complementing the UTI Event Form: Instructions for key data fields

- **Urinary catheter status**
  - Defined as the status of a urinary catheter device on the Date of Event
  - One of three options is selected to describe urinary catheter status
    - “In place”: an indwelling urinary catheter was present on the date of the event
    - “Removed within last 2 calendar days”: an indwelling urinary catheter was recently taken out
    - “Not in place”: No indwelling urinary catheter was in place, or recently removed > 2 calendars ago
  - This field does not refer to how the specimen was collected
Collecting Resident Denominators

- **Resident days**
  - The monthly sum of the total number of residents present in the facility each day of that month

- **Catheter days**
  - The monthly sum of the number of residents with an indwelling catheter each day of that month
    - None of the following should be included when counting indwelling catheter days: suprapubic catheters, in/out straight catheters or condom catheters.

- Counts are collected daily for all residents in the facility
Collecting Resident Denominators

- New antibiotic starts for UTI indication
  - The monthly sum of all new prescriptions for antibiotics given to residents suspected or diagnosed with having a UTI (catheter-associated and not catheter associated)
  - *Count antibiotic starts even if the infection being treated did not meet NHSN criteria for a symptomatic UTI event*

- Capture any new antibiotic order, regardless of number of doses or days of therapy given

- Only include antibiotics ordered while the resident is receiving care in your facility
  - Do not count antibiotics which were started by another healthcare facility prior to the resident’s admission or readmission to your facility
### Denominators for LTCF

<table>
<thead>
<tr>
<th>Date</th>
<th><em>Number of residents</em></th>
<th><em>Number of residents with a urinary catheter</em></th>
<th><em>New antibiotic starts for UTI indication</em></th>
<th><em>Number of admissions</em></th>
<th>Number of admissions on C. diff treatment</th>
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## Denominators Form

### Denominators for LTCF

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<tr>
<th>Date</th>
<th><em>Number of residents</em></th>
<th><em>Number of residents with a urinary catheter</em></th>
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*Required for saving*

**Facility ID:**  

**Location Code:**  

**Month:**  

**Year:**

- **Record the # of residents with catheters each day**
- **Record the totals for the month**
SUTI Data Analysis

- Calculating the SUTI Rate
  - SUTI incidence rate per 1,000 “non-catheter” resident days
    
    \[
    \text{SUTI Rate} = \frac{\text{# SUTIs identified}}{\text{Resident days} - \text{urinary catheter days}} \times 1000
    \]

  - Only SUTIs which are NOT catheter-associated are included
    - Remember: Events in residents with other urinary devices such as suprapubic catheters are counted as SUTI
Calculating the CA-SUTI Rate

- CA-SUTI incidence rate per 1,000 indwelling catheter days

\[
\text{CA-SUTI Rate} = \frac{\# \text{ CA-SUTIs identified}}{\text{Urinary catheter days}} \times 1000
\]

- Only symptomatic events which develop at the time an indwelling catheter is in place or has been removed in the last 2 calendar days will be included.
Urinary catheter use analysis

- **Urinary catheter utilization ratio**

\[
\frac{\text{Urinary catheter utilization}}{\text{Urinary catheter days}} = \frac{\text{Urinary catheter utilization}}{\text{Resident days}}
\]

- Device utilization ratio measures the proportion of total resident-days in which indwelling urinary catheters were used.

- **NOTE**: Indwelling catheter use is necessary for CA-SUTI. Therefore reducing your facility catheter utilization rate, may lead to reduced CA-SUTI rates.
Antibiotic use for UTI Analysis

- **UTI treatment ratio**

  \[
  \text{UTI treatment ratio} = \frac{\text{New antibiotic starts for UTI}}{\text{Total UTI count (SUTI+CASUTI+ABUTI)}}
  \]

  - UTI treatment ratio compares the number of clinically treated UTIs to the number of UTIs meeting NHSN surveillance definitions.

  **NOTE:** When the UTI treatment ratio is >1, there are more antibiotic starts for UTI than symptomatic UTI events submitted.
**UTI Event Metrics**

- **Total UTI Rate/1,000 resident-days** = \( \frac{\text{Number of all UTI events per month (i.e., SUTI + CA-SUTI + ABUTI)}}{\text{Total resident-days per month}} \times 1,000 \)

- **Percent that is SUTI** = \( \frac{\text{Number of SUTI events}}{\text{Total number of UTI events}} \times 100 \)

- **Percent that is CA-SUTI** = \( \frac{\text{Number of CA-SUTI events}}{\text{Total number of UTI events}} \times 100 \)

- **Percent that is ABUTI** = \( \frac{\text{Number of ABUTI events}}{\text{Total number of UTI events}} \times 100 \)

- **SUTI incidence rate/1,000 resident-days** = \( \frac{\text{Number of SUTI events}}{\text{(Total resident-days – urinary catheter-days)}} \times 1,000 \)

- **CA-SUTI incidence rate/1,000 catheter-days** = \( \frac{\text{Number of CA-SUTI events}}{\text{Urinary catheter-days}} \times 1,000 \)

- **Urinary Catheter Utilization Ratio** = \( \frac{\text{Total urinary catheters-days}}{\text{Total resident-days}} \)

- **UTI treatment ratio**: \( \frac{\text{New antibiotic starts for UTI}}{\text{Total UTI Count}} \)
Custom Fields

- Additional data entry fields which users can name (labels) and capture text or numeric data
- Available on each event form
- User can customize or expand data collected and submitted at your facility using these optional fields
Let’s Review!

- You can perform monitoring of all urinary tract infections, both non-catheter associated and catheter-associated.
- To get the most from your data:
  - Minimum reporting is six months during a calendar year
  - Monitoring should be done facility-wide
  - Keeping a daily log of residents with indwelling urinary catheters will make it easier to calculate total urinary catheter days at the end of the month
  - Keeping a log of every new antibiotic start for suspected or diagnosed UTI will make it easier to report monthly antibiotic starts for UTI at the end of the month
NHSN Resources

- NHSN Home Page
  - http://www.cdc.gov/nhsn/

- NHSN LTCF Component

- LTCF Component UTI Event Reporting